

Reduced Tillage Tomato Production Summary of Research and Farm Demonstration Activities 1995-2002

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Vegetable crop growers increasingly seek production system alternatives that reduce costs, minimize inputs, and sustain soil and water resources. In recent years, nonchemical pest management options have also become a high priority for producers because of impending losses of control materials.

In 1995, we began preliminary evaluations of processing and fresh market tomato production system alternatives that might address these issues. The production approach we started with included the use of off-season, winter cover crops that are killed and converted to surface mulches in the spring just prior to transplanting. This basic system had previously been developed and refined by east coast researchers, Dr. Aref Abdul-Baki at the USDA ARS Beltsville Agricultural Research Center, and by Dr. Ron Morse at Virginia Polytechnic Institute and State University.

Overall, this work has demonstrated the following findings: 1) planting and harvesting crops using conservation tillage/surface systems is possible given some equipment modification, 2) yields can be maintained relative to standard tillage in certain conservation tillage crops residue environments, 3) season-long weed control is generally not achieved with surface residues alone and some sort of in-season intervention is needed, 4) changes in several soil properties occur in sustained conservation tillage production systems, and 5) above and below surface mulch temperatures may be decreased relative to bare soil.

For more information on this ongoing research, please contact Jeff Mitchell at 559-646-6565 or mitchell@uckac.edu. Examples of practices used in these reduced tillage mulch systems are shown below.



Transplanting processing tomatoes into cover crops residue in Winters, CA, 2001



Flail mowing cover crop prior to transplanting tomatoes, Five Points, CA, 1998



No-till transplanting processing tomatoes into cover crop residue mulch Meridian, CA, 2001



High residue cultivator set-up and adjustment, Vernalis, CA, 2000



High residue cultivation in cover crop mulch no-till transplanted processing tomato field, Tracy, CA, 1999